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EXAMINER	
AHMED, SHEEBA	
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Please find below and/or attached an Office communication concerning this application or proceeding.

CK 6

Office Action Summary	Application No. 09/867,543	Applicant(s) SHIMODAIRA ET AL.
	Examin r Sheeba Ahmed	Art Unit 1773

-- The MAILING DATE of this communicati n appears on the cover she t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) 1-48 is/are pending in the application.

4a) Of the above claim(s) 8, 15, 33, AND 45 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) 1-7, 9-14, 16-32, 34-44, and 46-48 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-7, 9-14, 16-32, 34-44 and 46-48, in Paper No. 5 is acknowledged. Claims 8, 15, 33, and 45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected Group II.

Claims 1-7, 9-14, 16-32, 34-44, and 46-48 are now under consideration.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Schreck et al. (US 5,716,698).

Schreck et al. disclose a multilayer film ***(corresponding to the resin sheet of the claimed invention)*** comprising an opaque layer ***(corresponding to the base layer of the claimed invention)*** comprising a polyolefin ***(corresponding to the thermoplastic resin of the claimed invention)*** and opacifying pigments in a maximum amount of 40% by weight and preferably between 1 and 30% by weight (Column 3, lines 6-10 and 45-51). The pigments have a mean particle size of 0.01 to 1 micron and examples of the pigment include aluminum oxide, calcium carbonate, silicon dioxide

and titanium oxide ***(corresponding to the inorganic oxide of the claimed invention and meeting the limitations that the inorganic oxides having an average particle diameter of 1 to 100 nm and are present in an amount between 0.1 to 23% by weight)*** (Column 3, lines 64-67 and Column 4, lines 1-4). With regards to the limitations that the resin sheet has a light transmittance of 88% or higher *(as recited in claim 2)*, a coefficient of linear expansion of 1.00E-4/^{o}C or lower *(as recited in claim 3)*, and a dimensional change of lower than +0.020% *(as recited in claim 4)*, the Examiner takes the position that such material property limitations must be inherent in the multilayer film disclosed by Schreck et al. given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the inorganic pigment used by Schreck et al. and that in the instant invention are identical. All limitations of claims 1-4 are either inherent or disclose din the above reference.

3. Claims 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Zeira et al. (US 5,932,342).

Zeira et al. disclose a light diffusing sheet material ***(corresponding to the resin sheet and base layer of the claimed invention)*** comprising a first optically clear material ***(corresponding to the resin of the base layer)*** and a second optically clear material dispersed in the first optically clear material ***(corresponding to the diffuser of the claimed invention)*** and wherein the first and second optically clear materials have a differential refractive index (Column 2, lines 56-61). The optically clear materials may be thermoplastic or thermosetting and are preferably ethylene and propylene polymers

and copolymers (Column 4, lines 14-18 and lines 29-31). The second optically clear material is a dispersed particulate or ellipsoidal material (Column 4, lines 39-41) and has a particle size of 1 to 50 microns ***(thus meeting the limitation that the diffuser has an average particle size of 0.2 to 100 macrons)*** (Column 5, lines 57-59). Example 1 illustrates that the second optically clear material, in this case the polystyrene dispersed phase, may be present in a ratio of 70:30 ***(thus meeting the limitation that the amount of the diffuser in 200 parts by weight or less per 100 parts of the resin)***. With regards to the limitations that the difference in specific gravity between the diffuser and the resin is 1 or smaller *(as recited in claim 17)*, the Examiner takes the position that such material property limitations must be inherent in the light diffusing sheet disclosed by Zeira et al. given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the diffuser used by Zeira et al. and that in the instant invention are identical. All limitations of claims 16 and 17 are either inherent or disclose din the above reference.

4. Claims 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Konno et al. (US 5,607,764).

Konno et al. disclose an optical diffuser ***(corresponding to the resin sheet of the claimed invention)*** comprising a transparent support and an optical diffusing layer ***(corresponding to the base layer of the claimed invention)*** comprising an organic polymer binder ***(corresponding to the resin of the base layer)*** and organic polymer particles ***(corresponding to the diffuser of the claimed invention)*** wherein the

difference of refractive index between the polymer binder the polymer particle is not more than 0.05 ***(thus meeting the limitations of claim 18)*** and wherein the particles have an average particle size of 10 to 21 microns ***(thus meeting the limitation that the diffuser has an average particle size of 0.2 to 100 microns)*** (Column 1, lines 63-67 and Column 2, lines 1-3). Examples of the polymer binder include thermosetting binders and thermoplastic binders as recited in Column 2, lines 36-47. In order to improve the visibility, a matting agent comprising inorganic powders such as silica powder, calcium carbonate or alumina powder nay be incorporated into the diffusing layer (Column 3, lines 16-21). Example 1 shows that the coating mixture for the diffusing layer contains 26.2 g of the PMMA particle and 12.1g of acrylate polymer ***(thus meeting the limitation that the amount of the diffuser in 200 parts by weight or less per 100 parts of the resin; the weight of toluene is not taken into consideration since toluene is a solvent and it evaporates once the coating mixture is dried)***. With regards to the limitations that the difference in specific gravity between the diffuser and the resin is 1 or smaller *(as recited in claim 17)*, the Examiner takes the position that such material property limitations must be inherent in the optical diffusing layer disclosed by Konno et al. given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the diffuser used by Konno et al. and that in the instant invention are identical. All limitations of claims 16-18 are either inherent or disclosed in the above reference.

5. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Landry et al. (US 5,051,298).

Landry et al. disclose filled polyacrylate or methacrylate ***(corresponding to the resin of the claimed invention)*** compositions having silica particles dispersed therein (Column 1, lines 6-10). The particles have a size of less than 0.1 microns and the concentration of the particles is in the range of about 10 to 65 weight percent ***(corresponding to the inorganic oxide of the claimed invention and meeting the limitations that the inorganic oxides having an average particle diameter of 1 to 100 nm and are present in an amount between 0.1 to 23% by weight)*** (Column 3, lines 1-5). The composition may be used to produce films ***(corresponding to the resin sheet and base layer of the claimed invention)*** that are optically clear and have superior hardness, compressive strength, and lower thermal expansion coefficient (Column 3, lines 18-30). With regards to the limitations that the resin sheet has a light transmittance of 88% or higher *(as recited in claim 2)*, a coefficient of linear expansion of 1.00E-4/^{o}C or lower *(as recited in claim 3)*, and a dimensional change of lower than +0.020% *(as recited in claim 4)*, the Examiner takes the position that such material property limitations must be inherent in the filled acrylate or filled methacrylate film disclosed by Landry et al. given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the inorganic pigment used by Landry et al. and that in the instant invention are identical. All limitations of claims 1-4 are either inherent or disclosed in the above reference.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 21-26 and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Hallman et al. (US 5,800,904) in view of Landry et al. (US 5,051,298)

Hallman et al disclose a surface covering ***(corresponding to the resin sheet of claim 21)*** (Column 1, lines 12-14) comprising an inorganic wear layer ***(corresponding to the inorganic gas barrier layer of claim 21)*** and a support layer. The wear layer comprises any transparent inorganic oxide or nitride and oxides and nitrides of silicon are exemplified ***(thus meeting the limitations of claim 25 and 26)***. The wear layer has a thickness of between 1 and 25 microns thick (Column 6, lines 42-53 and Column 7, lines 18-29). The support layer ***(corresponding to the base layer of claim 21)*** may be any of a class of filled organic polymeric materials such as filled acrylates (Column 7, lines 53-67).

Hallman et al. do not teach that the filled polymeric support layer comprises a thermoplastic or thermosetting resin with an inorganic oxide dispersed therein and wherein the inorganic oxide has an average particle diameter of 1 to 100nm and is present in an amount between 0.1 and 23% by weight.

However, Landry et al. disclose filled polyacrylate or methacrylate ***(corresponding to the resin of the claimed invention)*** compositions having silica

particles dispersed therein (Column 1, lines 6-10). The particles have a size of less than 0.1 microns and the concentration of the particles is in the range of about 10 to 65 weight percent ***(corresponding to the inorganic oxide of the claimed invention and meeting the limitations that the inorganic oxides having an average particle diameter of 1 to 100 nm and are present in an amount between 0.1 to 23% by weight)*** (Column 3, lines 1-5). The composition may be used to produce films ***(corresponding to the resin sheet and base layer of the claimed invention)*** that are optically clear and have superior hardness, compressive strength, and lower thermal expansion coefficient (Column 3, lines 18-30).

Accordingly, it would have been obvious to one having ordinary skill in the art to replace the support layer disclosed by Hallman et al. with the filler polyacrylate or methacrylate film taught by Landry et al. given that Landry et al. specifically teach that their filled film has superior hardness, compressive strength, and lower thermal expansion coefficient. With regards to the limitations that the resin sheet has a light transmittance of 88% or higher *(as recited in claim 22)*, a coefficient of linear expansion of 1.00E-4/^{o}C or lower *(as recited in claim 23)*, a dimensional change of lower than +0.020% *(as recited in claim 24)*, and a water vapor permeability of 10g/m2.24h.atm or lower *(as recited in claim 28)*, the Examiner takes the position that such material property limitations must be inherent given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the inorganic pigment used by Landry et al. and inorganic layer taught by Hallman et al. and that in the instant invention are identical.

7. Claims 9-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konno et al. (US 5,607,764) in view of Landry et al. (US 5,051,298)

Konno et al. disclose an optical diffuser ***(corresponding to the resin sheet of the claimed invention)*** comprising a transparent support and an optical diffusing layer ***(corresponding to the base layer of the claimed invention)*** comprising an organic polymer binder ***(corresponding to the resin of the base layer)*** and organic polymer particles ***(corresponding to the diffuser of the claimed invention)*** wherein the difference of refractive index between the polymer binder the polymer particle is not more than 0.05 ***(thus meeting the limitations of claim 18)*** and wherein the particles have an average particle size of 10 to 21 microns ***(thus meeting the limitation that the diffuser has an average particle size of 0.2 to 100 microns)*** (Column 1, lines 63-67 and Column 2, lines 1-3). Examples of the polymer binder include thermosetting binders and thermoplastic binders as recited in Column 2, lines 36-47. In order to improve the visibility, a matting agent comprising inorganic powders such as silica powder, calcium carbonate or alumina powder nay be incorporated into the diffusing layer (Column 3, lines 16-21). Example 1 shows that the coating mixture for the diffusing layer contains 26.2 g of the PMMA particle and 12.1g of acrylate polymer ***(thus meeting the limitation that the amount of the diffuser in 200 parts by weight or less per 100 parts of the resin; the weight of toluene is not taken into consideration since toluene is a solvent and it evaporates once the coating mixture is dried)***.

Konno et al. do not disclose that the inorganic particle, acting as the matting agent, has an average particle diameter of 1 to 100nm and is present in an amount between 0.1 and 23% by weight.

However, Landry et al. disclose filled polyacrylate or methacrylate compositions having silica particles dispersed therein (Column 1, lines 6-10). The particles have a size of less than 0.1 microns and the concentration of the particles is in the range of about 10 to 65 weight percent ***(corresponding to the inorganic oxide of the claimed invention and meeting the limitations that the inorganic oxides having an average particle diameter of 1 to 100 nm and are present in an amount between 0.1 to 23% by weight)*** (Column 3, lines 1-5). The composition may be used to produce optically clear films. The silica component acts as reinforcing agent and imparts superior hardness, compressive strength, and lower thermal expansion coefficient to the film (Column 3, lines 18-30).

Accordingly, it would have been obvious to one having ordinary skill in the art to add a silica, having a size of less than 0.1 micron and a concentration in the range of about 10 to 65 weight percent, to the optical diffusing layer disclosed by Konno et al. given that Landry et al. specifically teach that the silica acts as reinforcing agent and imparts superior hardness, compressive strength, and lower thermal expansion coefficient to a film. With regards to the limitations that the difference in specific gravity between the diffuser and the resin is 1 or smaller *(as recited in claim 10)*, the Examiner takes the position that such material property limitations must be inherent in the optical diffusing layer disclosed by Konno et al. given that the chemical composition and

amount of the resin and the chemical composition, amount and particle size of the diffuser used by Konno et al. and that in the instant invention are identical.

8. Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallman et al. (US 5,800,904) in view of Landry et al. (US 5,051,298) and Konno et al. (US 5,607,764).

Hallman et al disclose a surface covering (Column 1, lines 12-14) comprising an inorganic wear layer and a support layer. The wear layer comprises any transparent inorganic oxide or nitride and oxides and nitrides of silicon are exemplified. The wear layer has a thickness of between 1 and 25 microns thick (Column 6, lines 42-53 and Column 7, lines 18-29). The support layer may be any of a class of filled organic polymeric materials such as filled acrylates (Column 7, lines 53-67).

Hallman et al. do not teach that the filled polymeric support layer comprises a thermoplastic or thermosetting resin with an inorganic oxide dispersed therein and wherein the inorganic oxide has an average particle diameter of 1 to 100nm and is present in an amount between 0.1 and 23% by weight and 0.1 to 60 weight percent of a diffuser having an average particle size of 0.2 to 100 microns.

However, Landry et al. disclose filled polyacrylate or methacrylate ***(corresponding to the resin of the claimed invention)*** compositions having silica particles dispersed therein (Column 1, lines 6-10). The particles have a size of less than 0.1 microns and the concentration of the particles is in the range of about 10 to 65 weight percent ***(corresponding to the inorganic oxide of the claimed invention and***

meeting the limitations that the inorganic oxides having an average particle diameter of 1 to 100 nm and are present in an amount between 0.1 to 23% by weight) (Column 3, lines 1-5). The composition may be used to produce optically clear films. The silica component acts as reinforcing agent and imparts superior hardness, compressive strength, and lower thermal expansion coefficient to the film (Column 3, lines 18-30). On the other hand, Konno et al. disclose an optical diffuser comprising a transparent support and an optical diffusing layer comprising an organic polymer binder and organic polymer particles ***(corresponding to the diffuser of the claimed invention)*** wherein the difference of refractive index between the polymer binder the polymer particle is not more than 0.05 ***(thus meeting the limitations of claim 31)*** and wherein the particles have an average particle size of 10 to 21 microns ***(thus meeting the limitation that the diffuser has an average particle size of 0.2 to 100 microns)*** (Column 1, lines 63-67 and Column 2, lines 1-3). Examples of the polymer binder include thermosetting binders and thermoplastic binders as recited in Column 2, lines 36-47. In order to improve the visibility, a matting agent comprising inorganic powders such as silica powder, calcium carbonate or alumina powder may be incorporated into the diffusing layer (Column 3, lines 16-21). Example 1 shows that the coating mixture for the diffusing layer contains 26.2 g of the PMMA particle and 12.1g of acrylate polymer ***(thus meeting the limitation that the amount of the diffuser in 200 parts by weight or less per 100 parts of the resin; the weight of toluene is not taken into consideration since toluene is a solvent and it evaporates once the coating***

mixture is dried). The diffuser allows the optical diffuser to have a high light diffusing power and light transmission (Column 1, lines 59-61).

Accordingly, it would have been obvious to one having ordinary skill in the art to add a silica, having a size of less than 0.1 micron and a concentration in the range of about 10 to 65 weight percent, and 0.1 to 60 weight percent of a diffuser, having an average particle size of 0.2 to 100 microns, to the support layer disclosed by Hallman et al. given that Landry et al. specifically teach that their filled film has superior hardness, compressive strength, and lower thermal expansion coefficient and Konno et al. teach that the diffuser allows the optical diffuser to have a high light diffusing power and light transmission. With regards to the limitations that the difference in specific gravity between the diffuser and the resin is 1 or smaller *(as recited in claim 30)*, the Examiner takes the position that such material property limitations must be inherent in the optical diffusing layer disclosed by Konno et al. given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the diffuser used by Konno et al. and that in the instant invention are identical.

9. Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallman et al. (US 5,800,904) in view of Konno et al. (US 5,607,764)

Hallman et al disclose a surface covering (Column 1, lines 12-14) comprising an inorganic wear layer and a support layer. The wear layer comprises any transparent inorganic oxide or nitride and oxides and nitrides of silicon are exemplified. The wear layer has a thickness of between 1 and 25 microns thick (Column 6, lines 42-53 and

Column 7, lines 18-29). The support layer may be any of a class of filled organic polymeric materials such as filled acrylates (Column 7, lines 53-67).

Hallman et al. do not teach that the filled polymeric support layer comprises 0.1 to 60 weight percent of a diffuser having an average particle size of 0.2 to 100 microns.

However, Konno et al. disclose an optical diffuser comprising a transparent support and an optical diffusing layer comprising an organic polymer binder and organic polymer particles ***(corresponding to the diffuser of the claimed invention)*** wherein the difference of refractive index between the polymer binder the polymer particle is not more than 0.05 ***(thus meeting the limitations of claim 36)*** and wherein the particles have an average particle size of 10 to 21 microns ***(thus meeting the limitation that the diffuser has an average particle size of 0.2 to 100 macrons)*** (Column 1, lines 63-67 and Column 2, lines 1-3). Examples of the polymer binder include thermosetting binders and thermoplastic binders as recited in Column 2, lines 36-47. In order to improve the visibility, a matting agent comprising inorganic powders such as silica powder, calcium carbonate or alumina powder nay be incorporated into the diffusing layer (Column 3, lines 16-21). Example 1 shows that the coating mixture for the diffusing layer contains 26.2 g of the PMMA particle and 12.1g of acrylate polymer ***(thus meeting the limitation that the amount of the diffuser in 200 parts by weight or less per 100 parts of the resin; the weight of toluene is not taken into consideration since toluene is a solvent and it evaporates once the coating mixture is dried)***. The diffuser allows the optical diffuser to have a high light diffusing power and light transmission (Column 1, lines 59-61).

Accordingly, it would have been obvious to one having ordinary skill in the art to add 0.1 to 60 weight percent of a diffuser, having an average particle size of 0.2 to 100 microns, to the support layer disclosed by Hallman et al. given that Konno et al. teach that the diffuser allows the optical diffuser to have a high light diffusing power and light transmission. With regards to the limitations that the difference in specific gravity between the diffuser and the resin is 1 or smaller *(as recited in claim 35)*, the Examiner takes the position that such material property limitations must be inherent in the optical diffusing layer disclosed by Konno et al. given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the diffuser used by Konno et al. and that in the instant invention are identical. Furthermore, with regards to the limitations that the resin sheet has a water vapor permeability of 10g/m2.24h.atm or lower *(as recited in claim 37)*, the Examiner takes the position that such a material property limitation must be inherent given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the diffuser used by Konno et al. and inorganic layer taught by Hallman et al. and that in the instant invention are identical.

10. Claims 5, 21-25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teraski et al. (US 6,432,516 B1) in view of Landry et al. (US 5,051,298).

Terasaki et al. disclose a moistureproof film having a thin metal or nonmetal oxide layer arranged on both sides of a resin layer (Column 4, lines 2-6). The moisture

proof film may be used to seal a pair of electrodes ***(corresponding to the electrode of claim 5)*** in an electroluminense device (Column 4, lines 28-32). The thin nonmetal or metal oxide layer may be a silicon oxide layer and has a thickness of 10 to 500 nm (thus meeting the limitaions of claim (Column 8, lines 33-46). The resin layer comprises polyolefin, polyester or polyvinyl chloride (Column 8, lines 20-23).

Terasaki et al. do not disclose that the resin film is a resin layer comprising an inorganic oxide dispersed therein and wherein the inorganic oxide has an average particle diameter of 1 to 100nm.

However, Landry et al. disclose filled polyacrylate or methacrylate ***(corresponding to the resin of the claimed invention)*** compositions having silica particles dispersed therein (Column 1, lines 6-10). The particles have a size of less than 0.1 microns and the concentration of the particles is in the range of about 10 to 65 weight percent ***(corresponding to the inorganic oxide of the claimed invention and meeting the limitations that the inorganic oxides having an average particle diameter of 1 to 100 nm and are present in an amount between 0.1 to 23% by weight)*** (Column 3, lines 1-5). The composition may be used to produce optically clear films. The silica component acts as reinforcing agent and imparts superior hardness, compressive strength, and lower thermal expansion coefficient to the film (Column 3, lines 18-31).

Accordingly, it would have been obvious to one having ordinary skill in the art to add a silica, having a size of less than 0.1 micron and a concentration in the range of about 10 to 65 weight percent to the resin layer disclosed by Terasaki et al. given that

Landry et al. specifically teach that the silica acts as reinforcing agent and imparts superior hardness, compressive strength, and lower thermal expansion coefficient to a resin film.

11. Claims 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US 5,963,284) in view of Konno et al. (US 5,607,764).

Jones et al. disclose a liquid crystal display having a first and second transparent substrates ad, a liquid crystal layer disposed between the substrates and a diffuser layer between the liquid crystal layer and the second substrate (Column 2, lines 47-60). In another embodiment, a layer of a red color filter material may be deposited on the substrate (Column 9, lines 44-46). The light diffuser layer comprises a host material and a plurality of diffusing particles embedded in the host material such that the difference in refractive index between the host material and the particles is equal to greater than 0.05 ***(thus meeting the limitations of claim 48).***

Jones et al. do not teach that the diffuser is present in an amount of 200 parts by weight or smaller per 100 parts by weight of the resin constituting the diffuser layer.

However, Konno et al. disclose an optical diffuser ***(corresponding to the resin sheet of the claimed invention)*** comprising a transparent support and an optical diffusing layer ***(corresponding to the base layer of the claimed invention)*** comprising an organic polymer binder ***(corresponding to the resin of the base layer)*** and organic polymer particles ***(corresponding to the diffuser of the claimed invention)*** wherein the difference of refractive index between the polymer binder the

polymer particle is not more than 0.05 ***(thus meeting the limitations of claim 18)*** and wherein the particles have an average particle size of 10 to 21 microns ***(thus meeting the limitation that the diffuser has an average particle size of 0.2 to 100 microns)*** (Column 1, lines 63-67 and Column 2, lines 1-3). Examples of the polymer binder include thermosetting binders and thermoplastic binders as recited in Column 2, lines 36-47. In order to improve the visibility, a matting agent comprising inorganic powders such as silica powder, calcium carbonate or alumina powder nay be incorporated into the diffusing layer (Column 3, lines 16-21). Example 1 shows that the coating mixture for the diffusing layer contains 26.2 g of the PMMA particle and 12.1g of acrylate polymer ***(thus meeting the limitation that the amount of the diffuser in 200 parts by weight or less per 100 parts of the resin; the weight of toluene is not taken into consideration since toluene is a solvent and it evaporates once the coating mixture is dried)***. Konno et al's diffuser provides satisfactory high light diffusing power and light transmission.

Accordingly, it would have been obvious to one having ordinary skill in the art to replace the diffusing layer disclosed by Jones et al. with the diffusing layer disclosed by Konno et al., i.e., a layer that contains the diffuser in an amount of 200 parts by weight or smaller per 100 parts by weight of the resin constituting the diffuser layer, given that Konno et al. teach that their diffuser provides satisfactory high light diffusing power and light transmission. With regards to the limitations that the difference in specific gravity between the diffuser and the resin is 1 or smaller *(as recited in claim 47)*, the Examiner takes the position that such material property limitations must be inherent in the optical

diffusing layer disclosed by Konno et al. given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the diffuser used by Konno et al. and that in the instant invention are identical.

12. Claims 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US 5,963,284) in view of Konno et al. (US 5,607,764) and Landry et al. (US 5,051,298).

Jones et al. disclose a liquid crystal display having a first and second transparent substrates ad, a liquid crystal layer disposed between the substrates and a diffuser layer between the liquid crystal layer and the second substrate (Column 2, lines 47-60). In another embodiment, a layer of a red color filter material may be deposited on the substrate (Column 9, lines 44-46). The light diffuser layer comprises a host material and a plurality of diffusing particles embedded in the host material such that the difference in refractive index between the host material and the particles is equal to greater than 0.05 ***(thus meeting the limitations of claim 48).***

Jones et al. do not teach that the diffuser is present in an amount of 200 parts by weight or smaller per 100 parts by weight of the resin constituting the diffuser layer or that the substrate layer is a resin layer that contains inorganic oxide dispersed therein and wherein the inorganic oxide has an average particle diameter of 1 to 100nm.

However, Konno et al. disclose an optical diffuser ***(corresponding to the resin sheet of the claimed invention)*** comprising a transparent support and an optical diffusing layer ***(corresponding to the base layer of the claimed invention)***

comprising an organic polymer binder ***(corresponding to the resin of the base layer)*** and organic polymer particles ***(corresponding to the diffuser of the claimed invention)*** wherein the difference of refractive index between the polymer binder the polymer particle is not more than 0.05 and wherein the particles have an average particle size of 10 to 21 microns ***(thus meeting the limitation that the diffuser has an average particle size of 0.2 to 100 microns)*** (Column 1, lines 63-67 and Column 2, lines 1-3). Examples of the polymer binder include thermosetting binders and thermoplastic binders as recited in Column 2, lines 36-47. In order to improve the visibility, a matting agent comprising inorganic powders such as silica powder, calcium carbonate or alumina powder nay be incorporated into the diffusing layer (Column 3, lines 16-21). Example 1 shows that the coating mixture for the diffusing layer contains 26.2 g of the PMMA particle and 12.1g of acrylate polymer ***(thus meeting the limitation that the amount of the diffuser in 200 parts by weight or less per 100 parts of the resin; the weight of toluene is not taken into consideration since toluene is a solvent and it evaporates once the coating mixture is dried)***. Konno et al's diffuser provides satisfactory high light diffusing power and light transmission. On the other hand, Landry et al. disclose filled polyacrylate or methacrylate ***(corresponding to the resin of the claimed invention)*** compositions having silica particles dispersed therein (Column 1, lines 6-10). The particles have a size of less than 0.1 microns and the concentration of the particles is in the range of about 10 to 65 weight percent ***(corresponding to the inorganic oxide of the claimed invention and meeting the limitations that the inorganic oxides having an average particle***

diameter of 1 to 100 nm and are present in an amount between 0.1 to 23% by weight) (Column 3, lines 1-5). The composition may be used to produce films ***(corresponding to the resin sheet and base layer of the claimed invention)*** that are optically clear and have superior hardness, compressive strength, and lower thermal expansion coefficient (Column 3, lines 18-30).

Accordingly, it would have been obvious to one having ordinary skill in the art to replace the diffusing layer disclosed by Jones et al. with the diffusing layer disclosed by Konno et al., i.e., a layer that contains the diffuser in an amount of 200 parts by weight or smaller per 100 parts by weight of the resin constituting the diffuser layer, given that Konno et al. teach that their diffuser provides satisfactory high light diffusing power and light transmission and to replace the substrate with a film containing a resin layer that contains inorganic oxide dispersed therein and wherein the inorganic oxide has an average particle diameter of 1 to 100nm given that Landry teach that such a film is optically clear and has superior hardness, compressive strength, and lower thermal expansion coefficient. With regards to the limitations that the difference in specific gravity between the diffuser and the resin is 1 or smaller *(as recited in claim 47)*, the Examiner takes the position that such material property limitations must be inherent in the optical diffusing layer disclosed by Konno et al. given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the diffuser used by Konno et al. and that in the instant invention are identical.

13. Claims 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US 5,963,284) in view of Landry et al. (US 5,051,298).

Jones et al. disclose a liquid crystal display having a first and second transparent substrates ad, a liquid crystal layer disposed between the substrates and a diffuser layer between the liquid crystal layer and the second substrate (Column 2, lines 47-60). In another embodiment, a layer of a red color filter material may be deposited on the substrate (Column 9, lines 44-46). The light diffuser layer comprises a host material and a plurality of diffusing particles embedded in the host material such that the difference in refractive index between the host material and the particles is equal to greater than 0.05 ***(thus meeting the limitations of claim 48).***

Jones et al. do not teach that the substrate layer is a resin layer that contains inorganic oxide dispersed therein and wherein the inorganic oxide has an average particle diameter of 1 to 100nm.

However, Landry et al. disclose filled polyacrylate or methacrylate ***(corresponding to the resin of the claimed invention)*** compositions having silica particles dispersed therein (Column 1, lines 6-10). The particles have a size of less than 0.1 microns and the concentration of the particles is in the range of about 10 to 65 weight percent ***(corresponding to the inorganic oxide of the claimed invention and meeting the limitations that the inorganic oxides having an average particle diameter of 1 to 100 nm and are present in an amount between 0.1 to 23% by weight)*** (Column 3, lines 1-5). The composition may be used to produce films ***(corresponding to the resin sheet and base layer of the claimed invention)*** that are

optically clear and have superior hardness, compressive strength, and lower thermal expansion coefficient (Column 3, lines 18-30).

Accordingly, it would have been obvious to one having ordinary skill in the art to replace the substrate with a film containing a resin layer that contains inorganic oxide dispersed therein and wherein the inorganic oxide has an average particle diameter of 1 to 100nm given that Landry teach that such a film is optically clear and has superior hardness, compressive strength, and lower thermal expansion coefficient. With regards to the limitations that the resin sheet has a coefficient of linear expansion of 1.00E-4/°C or lower *(as recited in claim 39)*, and a dimensional change of lower than +0.020% *(as recited in claim 40)*, the Examiner takes the position that such material property limitations must be inherent in the filled acrylate or filled methacrylate film disclosed by Landry et al. given that the chemical composition and amount of the resin and the chemical composition, amount and particle size of the inorganic pigment used by Landry et al. and that in the instant invention are identical.

14. Claims 6, 7, 12, 13, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake et al. (US 5,942,320) in view of Landry et al. (US 5,051,298).

Miyake et al. disclose a barrier composite film having a base film ad an inorganic layer (See Abstract).The base film comprises a resin (Column 5, lines 24-32) and inorganic layer may comprise a substance such as aluminum (Column 10, lines 33-65).

Miyake et al. do not disclose that the base film comprises inorganic oxide dispersed therein and wherein the inorganic oxide has an average particle diameter of 1 to 100nm.

However, Landry et al. disclose filled polyacrylate or methacrylate ***(corresponding to the resin of the claimed invention)*** compositions having silica particles dispersed therein (Column 1, lines 6-10). The particles have a size of less than 0.1 microns and the concentration of the particles is in the range of about 10 to 65 weight percent ***(corresponding to the inorganic oxide of the claimed invention and meeting the limitations that the inorganic oxides having an average particle diameter of 1 to 100 nm and are present in an amount between 0.1 to 23% by weight)*** (Column 3, lines 1-5). The composition may be used to produce films ***(corresponding to the resin sheet and base layer of the claimed invention)*** that are optically clear and have superior hardness, compressive strength, and lower thermal expansion coefficient (Column 3, lines 18-30).

Accordingly, it would have been obvious to one having ordinary skill in the art to replace the add an inorganic oxide having an average particle diameter of 1 to 100nm to the base film disclosed by Miyake et a. given that Landry specifically teaches that the presence of the inorganic oxide provides an optically clear film having superior hardness, compressive strength, and lower thermal expansion coefficient.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (703)305-0594. The examiner can normally be reached on Mondays and Thursdays from 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703)308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-5408 for regular communications and (703)305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-5665.

Sheeba Ahmed

Sheeba Ahmed
December 30, 2002